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### *Perspectives in Disease Prevention and Health Promotion*

#### **Strengthening Public Health Practice: Survey of State Health Officers — United States, 1989**

In 1988, the Institute of Medicine (IOM) released a report entitled *The Future of Public Health* (1), which included 55 recommendations directed at state health departments to improve public health practice in the United States. Following the IOM report, the Association of State and Territorial Health Officials (ASTHO) conducted a national survey of state health officers\* regarding these recommendations. This report summarizes the survey findings for 25 IOM recommendations.

In March 1989, ASTHO mailed to the 50 state health officers a questionnaire that asked whether they agreed with the IOM recommendations; whether specific recommendations were part of their program responsibilities; and whether their states planned to implement any recommendations not already in place. All 50 states returned questionnaires; rates of nonresponse to specific questions were low (0–4%).

Of the 50 state health agencies, 25 (50%) were independent, cabinet-level public health agencies; 13 (26%) were located in a department of health that was combined with another function (i.e., social services, welfare services, human services, or environmental health); six (12%) were located in an integrated human services or human resources department; and six were "other." Respondents agreed nearly unanimously with the three core functions of public health as defined by the IOM report: assessment<sup>†</sup> (100%), policy development<sup>‡</sup> (100%), and assurance<sup>§</sup> (94%). However, these functions were being performed by 82%, 72%, and 56% of respondents, respectively.

\*For this report, state health officer is defined as the chief public health official of a state as specified by law or as designated by the chief executive of each state.

<sup>†</sup>Regular and systematic collection, assembly, analysis, and dissemination of information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems.

<sup>‡</sup>Use of the scientific knowledge base in planning, priority-setting, allocating resources, and decision-making about what should be done in public health.

<sup>§</sup>Assuring constituents that services necessary to achieve agreed-upon goals are provided by encouraging actions by others, requiring action through regulation, or providing services directly.

*Public Health Practice — Continued*

State health officers overwhelmingly agreed with the IOM recommendations to improve community involvement, including the need to strengthen relationships with physicians and other health professionals (100%), voluntary health organizations (100%), and legislators and other public officials (98%). At the time of the survey, however, 20%, 52%, and 38% of states, respectively, had implemented efforts to strengthen ties to these groups.

State health officers strongly agreed ( $\geq 84\%$ ) with all IOM recommendations regarding specific duties of state public health programs (Table 1). However, the proportion of states that had implemented these recommendations ranged from 26% (linkages to mental health) to 86% (regulation of health facilities).

State health officers strongly supported public health involvement in a wide range of environmental health issues (e.g., drinking-water quality and toxic exposure evaluation) (Table 2); involvement was expanding for indoor air pollution and occupational hazards.

**TABLE 1. Number of state public health departments agreeing with and implementing selected recommendations of the Institute of Medicine (IOM) Committee on the Future of Public Health — United States, 1989**

IOM recommendation	Agree	Implementing	Plan to implement
1. Support local health with subsidies and direct assistance	50	37	11
2. Educate public on community health needs and policy issues	50	34	14
3. Revise statutory base to address contemporary health problems	50	33	15
4. Assess state health needs based on state data	49	40	10
5. Assure statewide availability of essential environmental health services	49	27	11
6. Develop comprehensive strategies to influence health-related behavior	48	21	24
7. Link with mental health services to improve integration of service delivery	48	13	18
8. Conduct population-based health research	47	24	16
9. Be responsible for disease prevention and health promotion	45	35	3
10. Assure personal health services for the medically indigent	45	29	14
11. Establish standards specifying minimum services to be provided by local public health	45	16	22
12. Be responsible for regulation of health facilities	44	43	0
13. Be responsible for health planning	42	25	13

*Public Health Practice — Continued*

The survey detected moderate support from state health officers for expanding their responsibilities to include substance abuse (72%), Medicaid (52%), mental health (48%), and regulation of health professionals (38%). Twenty-six percent of health departments were responsible for substance abuse, 22% for regulation of health professionals, 14% for Medicaid, and 12% for mental health.

*Adapted from: J Public Health Policy 1990;11:296-304, as reported by: HD Scott, MD, Association of State and Territorial Health Officials; JT Tierney, MSW, WJ Waters, Jr, PhD, M Buban, D Perry, Rhode Island Dept of Health, Public Health Practice Program Office, CDC.*

**Editorial Note:** *The Future of Public Health* has provided a critical assessment of the U.S. public health system and has focused attention on the needs to reform all levels of the public health system, mobilize the public health community (including federal, state, and local agencies and public and private components), and initiate action to strengthen the system. The IOM report received support from the U.S. Public Health Service (PHS) and the Kellogg Foundation and was developed by a committee representing state and local public health agencies and universities; appointed and elected officials; private practitioners; academicians in health, economics, medicine, and law; and the private sector. To develop key background information for the report, committee members conducted site visits and regional hearings, commissioned original papers, and completed a comprehensive literature review.

The IOM committee perceived a lack of consensus regarding the mission of public health in the United States\*\*; this perception is consistent with substantial variations in organizational structure and available services (2). In addition, despite major achievements by the U.S. public health system, the IOM report cited several limitations in a substantial portion of the system, including 1) weak and unstable leadership, 2) decreased professional competence in public health agencies, 3) ineffective organizations, 4) outdated statutes, 5) inadequate resources for public health activities, 6) inadequate data gathering and analysis, and 7) lack of effective links

\*\*The committee defines the mission of public health as fulfilling society's interest in assuring conditions in which persons can be healthy.

**TABLE 2. Number of state public health departments agreeing with and implementing environmental health recommendations of the Institute of Medicine (IOM) Committee on the Future of Public Health — United States, 1989**

<b>IOM recommendation</b>	<b>Agree</b>	<b>Implementing</b>	<b>Plan to implement</b>
The state health department should be concerned with:			
1. Toxic exposures	50	33	11
2. Food protection	49	48	2
3. Outdoor air	49	24	5
4. Indoor air pollution	49	22	18
5. Drinking water quality	48	37	3
6. Occupational hazards	43	19	11
7. Pesticide management	42	18	7

*Public Health Practice — Continued*

between the public and private sectors (1). Because of these limitations, comprehensive and effective preventive health services are not uniformly available to the U.S. population.

The ASTHO survey indicates strong support for most of the IOM recommendations and documents that many states are implementing recommendations. However, for some of the recommendations, no consensus exists; for others, consensus exists but implementation is lacking. For example, only 48%–72% of state health officers indicated that substance abuse, Medicaid, and mental health should be the responsibility of the health department. The National Association of County Health Officials and the U.S. Conference of Local Health Officials have expressed similar concerns (3,4). In comparison, 90%–100% of state health officers agreed that states should support local health services with subsidies and technical assistance, establish standards specifying minimum services for local public health, and hold localities accountable. Although 74% were supporting local public health services, only 32% had set minimum standards and were holding local public health agencies accountable.

In response to the IOM report, ASTHO has proposed new legislation that would increase support to state and local health agencies and schools of public health and augment the capacities of public health agencies to achieve health objectives for the nation for the year 2000 (5). In addition, PHS has developed a plan for strengthening public health in the United States (6) in which each PHS agency describes plans to assist states and localities in strengthening the core functions of assessment, policy development, and assurance. For example, CDC is working with ASTHO, NACHO, schools of public health, and other organizations to 1) strengthen the professional competence of the public health work force through initiatives such as the National Laboratory Training Network; 2) identify a core data set to strengthen the public health knowledge base for decision-making; and 3) broaden CDC involvement with state and local agencies, the medical community, community-based organizations, and volunteer groups.

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Current Trends

### Hospitalizations for the Leading Causes of Death Among the Elderly — United States, 1987

Seven of the 10 leading causes of death among the elderly (1) (i.e., persons  $\geq 65$  years of age) in the United States are chronic diseases. However, public health officials have recognized that mortality data alone are insufficient for quantifying the public health impact of chronic diseases on the elderly (2). This report uses 1987 Medicare data to compare deaths among the elderly with the frequency and costs of hospitalization.

Medicare provides coverage for hospital expenses for  $>95\%$  of elderly persons (3). The Health Care Financing Administration (HCFA) collects data on all Medicare-reimbursed hospitalizations. HCFA's computerized records contain diagnostic, surgical, financial, demographic, and residential data for each Medicare-related discharge (4,5). Unique identifiers in discharge records make it possible to distinguish persons hospitalized more than once.

In 1987, the 10 leading causes of death (not all of which were among the 10 leading causes of hospitalization) among the elderly accounted for 86.3% of all deaths in this group and for 45.6% of all hospital discharges (Table 1).\* Of the 10 leading causes of death, seven chronic diseases (diseases of the heart; malignant neoplasms; cerebro-vascular disease; chronic obstructive pulmonary disease; diabetes mellitus; atherosclerosis; and nephritis, nephrotic syndrome, and nephrosis) accounted for 79.5% of deaths and 39.0% of hospital discharges (Table 1).

Of the more than \$39 billion Medicare provided for hospitalizations for the elderly in 1987, approximately \$20 billion (50.2%) was for hospitalization of persons with a principal diagnosis that ranked among the 10 leading causes of death. Forty-three percent of Medicare reimbursement was for hospitalizations for one of the seven chronic diseases (Table 1).

In 1987, nearly 20% of elderly persons were hospitalized at least once (Table 2). Among these, the number of persons hospitalized for heart diseases and malignant neoplasms was approximately twice the number who died from these diseases; for diabetes mellitus and cerebrovascular diseases, the number hospitalized was nearly four times the number who died (Table 2).

An additional 28% of discharges and 7% of deaths not among the 10 leading causes of death were for predominantly chronic conditions in five major disease categories (circulatory, digestive, genitourinary, musculoskeletal, and neurologic diseases).

*Reported by: AM McBean, MD, JL Warren, PhD, JD Babisch, MPH, Div of Beneficiary Studies, Office of Research and Demonstrations, Health Care Financing Administration. Chronic Disease Surveillance Br, Office of Surveillance and Analysis, Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** Although surveillance for chronic diseases frequently uses mortality data, annual mortality statistics substantially underestimate the number of persons affected by these conditions. As this report and others (7) have demonstrated, Medicare hospital discharge data can be used to complement information provided

\*In this report, "hospitalized for" or "accountable for" (when referring to hospitalization) mean *principal diagnosis* (i.e., the diagnosis deemed at the time of discharge to have been responsible for the patient's admission).

*Hospitalizations -- Continued*

by mortality statistics. The number and cost of hospitalizations provide a measure of both morbidity and the burden on the health-care system, and the number of persons hospitalized provides an estimate of the number of persons affected.

For at least five reasons, the data in this report may underestimate the total hospitalization burden attributable to chronic diseases. First, many chronic conditions were not ranked within the 10 leading causes of death and therefore were not represented in the tables. Second, some hospitalizations for which therapies (e.g., chemotherapy for cancer) are listed as principal "diagnoses" probably should be attributed to chronic disease. Third, certain chronic diseases can contribute etiologically to hospitalizations with a principal diagnosis other than a chronic disease (e.g., osteoporosis, which can contribute to hip fractures). Fourth, chronic diseases coded as secondary rather than primary diagnoses may contribute to the need for hospitalization. Fifth, persons receiving care from organizations such as health maintenance organizations, the Veteran's Administration, and the Indian Health Service may not be routinely reported to HCFA, although these persons are included in denominators used here to calculate hospitalization and death rates.

**TABLE 1. Percentage of deaths, Medicare hospitalizations, and Medicare reimbursement costs for hospitalizations associated with the leading causes of death\* among persons  $\geq 65$  years of age — United States, 1987**

Underlying cause of death/ Principal diagnosis (ICD-9-CM rubric)	Deaths <sup>†</sup>	Medicare hospitalization	
		Discharges <sup>§</sup>	Reimbursement <sup>¶</sup>
All causes	1,509,686	8,956,380	\$39,339,100,395
Diseases of the heart <sup>**</sup> (390-398, 402, 404-429)	41.1%	20.4%	22.2%
Malignant neoplasms <sup>††</sup> (140-208)	21.0%	7.9%	10.4%
Cerebrovascular disease <sup>††</sup> (430-438)	8.6%	6.2%	5.9%
Chronic obstructive pulmonary disease <sup>††</sup> (490-496)	4.3%	2.1%	1.7%
Pneumonia/Influenza (480-487)	4.0%	4.6%	4.7%
Diabetes mellitus <sup>††</sup> (250)	1.9%	1.4%	1.3%
Accidents and adverse effects <sup>**</sup>	1.7%	0.9%	0.9%
Atherosclerosis <sup>††</sup> (440)	1.4%	0.4%	0.7%
Nephritis, nephrotic syndrome, and nephrosis <sup>††</sup> (580-589)	1.2%	0.6%	0.8%
Septicemia (038)	1.1%	1.1%	1.6%
<b>Total</b>	<b>86.3%</b>	<b>45.6%</b>	<b>50.2%</b>
<b>Total chronic diseases</b>	<b>79.5%</b>	<b>39.0%</b>	<b>43.0%</b>

\*The leading causes of death are not necessarily the leading causes of hospitalization.

<sup>†</sup>Reference 6.

<sup>§</sup>Reference 5.

<sup>¶</sup>Chronic diseases.

<sup>\*\*</sup>For deaths, underlying cause is an external-cause-of-injury rubric E800-E949. For hospitalizations, principal diagnosis is a nature-of-injury rubric 800-979 with a secondary diagnosis rubric E800-E949.

*Hospitalizations — Continued*

Chronic diseases affect a large proportion of the elderly and are a major public health burden. Medicare data can be used to assess this burden and to examine the impact of specific conditions (e.g., ischemic heart disease or obstructive pulmonary diseases) on demographic and geographic subgroups of the elderly, to improve understanding of the burden of chronic disease in this rapidly growing population, and to identify priorities for primary or secondary prevention.

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**TABLE 2. Number and rates of persons hospitalized and deaths associated with the leading causes of death\* among persons  $\geq 65$  years of age — United States, 1987**

Underlying cause of death/ Principal diagnosis (ICD-9-CM rubric)	Persons hospitalized		Death		
	No. <sup>†</sup>	Rate <sup>§</sup>	No.	Rate <sup>§</sup>	Ratio <sup>¶</sup>
All causes	5,764,800	19,119	1,509,686	4,934	3.8
Diseases of the heart (390-398, 402, 404-429)	1,335,435	4,424	619,775	2,014	2.2
Malignant neoplasms (140-208)	583,882	1,948	316,343	1,049	1.8
Cerebrovascular disease (430-438)	497,628	1,637	129,875	419	3.8
Chronic obstructive pulmonary disease (490-496)	149,373	500	64,477	213	2.3
Pneumonia/Influenza (480-487)	374,738	1,229	60,571	195	6.2
Diabetes mellitus (250)	110,179	369	28,396	93	3.9
Accidents and adverse effects**	76,213	249	25,900	85	2.9
Atherosclerosis (440)	28,868	96	21,377	68	1.4
Nephritis, nephrotic syndrome, and nephrosis (580-589)	44,736	148	18,265	59	2.4
Septicemia (038)	91,310	299	15,877	52	5.8

\*The leading causes of death are not necessarily the leading causes of hospitalization.

<sup>†</sup>A person hospitalized more than once for the same diagnosis is counted once; a person hospitalized for two or more of the diagnoses is counted once for each diagnosis.

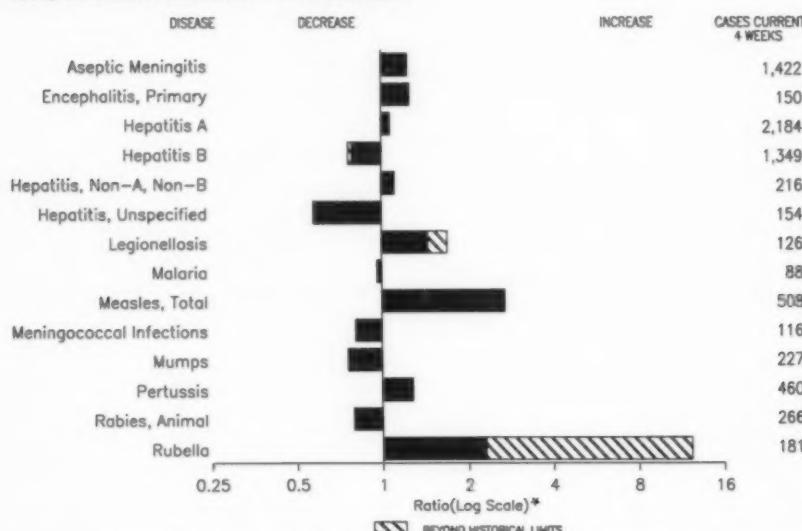
<sup>§</sup>Per 100,000 persons, age- and sex-adjusted to the 1980 U.S. population.

<sup>¶</sup>Ratio of number of persons hospitalized to number of persons who died.

<sup>\*\*</sup>For deaths, underlying cause is an external-cause-of-injury rubric E800-E949. For hospitalizations, principal diagnosis is a nature-of-injury rubric 800-979 with a secondary diagnosis rubric E800-E949.

*(Continued on page 785)*

**FIGURE I. Notifiable disease reports, comparison of 4-week totals ending October 27, 1990, with historical data — United States**



\*Ratio of current 4-week total to mean of 15 4-week totals (from comparable, previous, and subsequent 4-week periods for past 5 years).

**TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending October 27, 1990 (43rd Week)**

	Cum. 1990	Cum. 1990
AIDS	35,073	2
Anthrax		
Botulism: Foodborne	17	
Infant	52	
Other	5	
Brucellosis	69	
Cholera	4	
Congenital rubella syndrome	3	
Diphtheria	3	
Encephalitis, post-infectious	1,236	
Gonorrhea: civilian	551,219	
military	7,261	
Leprosy	168	
Leptospirosis	45	
Measles: imported	1,070	
indigenous	22,531	
Plague		
Poliomyelitis, Paralytic*		
Psittacosis		95
Rabies, human		1
Syphilis: civilian		40,390
military		203
Syphilis, congenital, age < 1 year		685
Tetanus		49
Toxic shock syndrome		245
Trichinosis		22
Tuberculosis		19,113
Tularemia		119
Typhoid fever		415
Typhus fever, tickborne (RMSF)		579

\*Three cases of suspected poliomyelitis have been reported in 1990; five of the 13 suspected cases in 1989 were confirmed and all were vaccine-associated.

TABLE II. Cases of specified notifiable diseases, United States, weeks ending October 27, 1990, and October 28, 1989 (43rd Week)

Reporting Area	AIDS	Aseptic Meningitis		Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy		
		Cum. 1990	Cum. 1990	Primary	Post-infectious	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	A	B	NA,NB	Unspecified		
UNITED STATES	35,073	8,729	843	1,236	551,219	581,745	23,920	16,692	2,050	1,423	1,075	168			
NEW ENGLAND	1,235	325	23	-	15,309	17,007	521	886	60	60	59	10			
Maine	52	12	3	-	168	219	9	24	4	1	5	-			
N.H.	55	34	-	-	142	150	7	38	5	3	4	-			
Vt.	13	31	2	-	46	57	5	41	5	-	6	-			
Mass.	683	106	11	-	6,488	6,577	340	544	36	54	36	9			
R.I.	75	104	1	-	1,005	1,237	48	39	-	2	8	1			
Conn.	357	38	6	-	7,460	8,767	112	200	10	-	-	-			
MID. ATLANTIC	10,472	833	44	7	72,598	85,146	3,245	2,166	194	85	331	20			
Upstate N.Y.	1,314	449	36	1	11,958	13,759	977	587	69	23	126	1			
N.Y. City	6,156	132	3	3	29,474	35,149	487	553	25	43	83	14			
N.J.	1,995	-	1	-	12,396	12,817	398	526	38	-	46	4			
Pa.	1,007	252	4	3	18,799	23,621	1,383	500	62	19	76	1			
E.N. CENTRAL	2,406	2,482	230	1,168	106,828	107,400	1,924	1,963	307	81	274	2			
Ohio	551	477	71	4	33,223	28,358	180	339	72	12	84	-			
Ind.	228	288	4	9	9,419	8,255	141	347	18	15	45	1			
Ill.	975	425	66	1,155	32,482	34,537	948	373	39	17	15	1			
Mich.	460	941	65	-	25,325	27,352	329	544	33	37	87	-			
Wis.	192	351	14	-	6,379	8,898	326	360	145	-	43	-			
W.N. CENTRAL	682	459	94	2	28,648	27,133	1,448	751	116	31	62	1			
Minn.	151	87	57	1	3,520	3,021	212	95	25	1	6	-			
Iowa	43	85	5	-	1,974	2,324	246	49	10	4	4	-			
Mo.	511	182	7	1	17,395	16,711	419	474	54	20	29	-			
N. Dak.	2	18	3	-	76	117	20	5	2	1	1	-			
S. Dak.	4	9	4	-	243	233	262	7	4	-	2	1			
Nebr.	50	36	7	-	1,550	1,198	84	30	4	-	12	1			
Kans.	121	42	11	-	3,890	3,529	205	91	17	5	8	-			
S. ATLANTIC	7,478	1,544	228	27	156,222	155,511	2,747	3,294	280	206	154	6			
Del.	82	40	5	-	2,681	2,705	98	84	9	2	11	-			
Md.	862	236	21	1	19,525	18,420	902	466	48	13	54	3			
D.C.	594	9	-	-	10,924	9,063	15	39	4	-	2	-			
Va.	610	276	47	1	14,879	13,472	261	210	36	140	13	-			
W. Va.	58	51	56	-	1,069	1,188	19	73	4	8	4	-			
N.C.	463	157	34	-	23,409	23,473	592	906	105	-	22	1			
S.C.	288	21	1	1	12,478	14,176	39	520	15	9	20	-			
Ga.	985	277	4	1	33,535	29,955	314	403	11	7	19	-			
Fla.	3,536	487	58	24	37,722	43,059	507	593	48	27	9	2			
E.S. CENTRAL	864	600	55	2	47,594	46,730	325	1,300	182	8	50	-			
Ky.	146	165	25	-	4,867	4,539	75	452	54	6	21	-			
Tenn.	287	115	22	2	15,107	15,627	153	701	109	-	16	-			
Ala.	193	225	8	-	15,677	15,131	96	143	17	1	13	-			
Miss.	238	95	-	-	11,943	11,433	1	4	2	-	-	-			
W.S. CENTRAL	3,816	705	50	7	60,022	60,756	2,788	1,783	85	268	44	34			
Ark.	182	22	5	-	2,253	2,553	459	73	10	23	9	-			
La.	607	83	9	-	11,372	12,878	166	262	5	7	13	-			
Okla.	171	73	3	6	5,067	5,244	489	137	23	25	14	-			
Tex.	2,856	527	33	1	36,330	35,649	1,674	1,311	47	213	8	34			
MOUNTAIN	917	341	21	2	11,195	12,258	3,815	1,219	185	111	42	2			
Mont.	11	5	-	-	172	158	156	62	7	4	5	-			
Idaho	21	7	-	-	116	149	79	68	8	-	3	-			
Wyo.	2	6	1	-	130	86	56	15	5	1	2	-			
Colo.	281	85	4	-	2,999	2,608	258	144	44	36	3	-			
N. Mex.	66	19	1	-	1,022	1,111	787	168	11	10	3	-			
Ariz.	274	154	8	-	4,359	5,062	1,725	417	66	43	11	2			
Utah	68	27	3	-	319	387	480	87	25	7	3	-			
Nev.	154	38	4	2	2,076	2,697	274	258	19	10	7	7	-		
PACIFIC	7,003	1,430	110	21	52,803	69,804	7,107	3,330	641	573	59	93			
Wash.	530	-	6	1	4,267	5,400	1,165	502	108	31	12	6			
Oreg.	265	-	-	-	2,115	2,593	719	345	49	8	45	71			
Calif.	6,055	1,236	96	19	45,136	60,570	4,980	2,369	469	522	-	-			
Alaska	24	105	7	-	860	792	175	52	5	5	-	-			
Hawaii	129	89	1	1	405	449	66	62	10	7	2	16			
Guam	2	2	-	-	192	136	12	2	-	11	-	-			
P.R.	1,451	62	6	-	637	930	139	404	9	26	-	-			
V.I.	11	-	-	-	357	572	1	11	-	-	-	-		10	
Amer. Samoa	-	1	-	-	31	63	53	34	-	-	-	-		4	
C.N.M.I.	-	-	-	-	156	79	10	9	-	15	-	-			

N: Not notifiable

U: Unavailable

C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending October 27, 1990, and October 28, 1989 (43rd Week)

Reporting Area	Malaria	Measles (Rubella)						Menin- gococcal Infections	Mumps	Pertussis				Rubella					
		Indigenous		Imported*		Total	Cum. 1989			Cum. 1990		Cum. 1990		Cum. 1989		Cum. 1990			
		Cum. 1990	1990	Cum. 1990	1990					Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1989		
UNITED STATES	984	10	22,531	1	1,070	13,999	2,018	59	4,363	199	3,430	3,123	31	1,047	339				
NEW ENGLAND	83	-	264	1	26	336	159	2	40	4	358	331	-	8	6				
Maine	1	-	28	-	2	1	14	-	-	-	16	25	-	1					
N.H.	4	-	-	11	9	15	11	1	10	3	52	16	-	1	4				
Vt.	7	-	-	-	1	3	12	-	2	-	7	6	-	-	1				
Mass.	46	-	22	-	7	63	73	-	11	1	253	255	-	2	1				
R.I.	8	-	27	-	3	41	12	-	5	-	6	11	-	1					
Conn.	17	-	187	-	4	213	37	1	12	-	24	18	-	3	-				
MID. ATLANTIC	218	2	1,267	-	157	985	319	4	294	5	489	254	-	11	36				
Upstate N.Y.	43	1	204	-	112	152	118	-	124	5	309	108	-	10	14				
N.Y. City	80	-	417	-	21	116	46	-	-	-	-	11	-	-	15				
N.J.	71	-	270	-	15	453	66	-	77	-	21	32	-	7					
Pa.	24	1	376	-	9	264	89	4	93	-	139	103	-	1	-				
E. N. CENTRAL	60	2	3,361	-	143	4,885	267	6	462	70	803	424	-	162	28				
Ohio	8	2	551	-	3	1,459	81	2	91	62	216	45	-	131	3				
Ind.	3	-	417	-	1	78	29	1	20	7	124	19	-	-	-				
Ill.	22	-	1,302	-	10	2,699	72	-	162	-	266	153	-	19	21				
Mich.	18	-	348	-	125	325	63	3	142	1	76	42	-	9	1				
Wis.	9	-	743	-	4	324	22	-	47	-	121	165	-	3	3				
W. N. CENTRAL	18	-	884	-	14	741	64	3	141	18	198	203	26	48	6				
Minn.	5	-	419	-	4	23	12	-	14	16	48	54	25	42	-				
Iowa	2	-	25	-	1	12	1	-	20	-	18	15	-	4	1				
Mo.	10	-	98	-	453	27	-	55	2	101	119	-	-	4	4				
N. Dak.	-	-	-	-	-	-	-	-	-	-	2	3	-	1	-				
S. Dak.	-	-	15	-	8	-	-	-	-	-	1	2	-	-	-				
Nebr.	-	-	97	-	1	113	5	-	6	-	7	6	1	1	-				
Kans.	1	-	230	-	-	140	15	3	46	-	21	4	-	-	1				
S. ATLANTIC	196	-	913	-	376	700	353	19	1,810	-	284	319	-	20	10				
Del.	4	-	8	-	3	40	3	-	6	-	8	1	-	-	-				
Md.	52	-	194	-	18	99	41	18	1,027	-	60	67	-	2	2				
D.C.	10	-	15	-	7	40	11	-	34	-	14	2	-	1	-				
Va.	49	-	84	-	2	22	46	-	99	-	18	33	-	1	-				
W. Va.	2	-	6	-	-	53	15	-	43	-	28	32	-	-	-				
N.C.	15	-	9	-	15	188	50	-	294	-	71	86	-	-	1				
S.C.	3	-	4	-	-	15	24	-	60	-	5	-	-	-	-				
Ga.	16	-	99	-	259	17	62	-	86	-	32	41	-	1	-				
Fla.	45	-	494	-	72	226	101	1	161	-	48	77	-	15	7				
E. S. CENTRAL	20	-	183	-	3	239	122	1	94	1	146	199	-	15	5				
Ky.	2	-	41	-	1	44	37	-	-	-	-	1	-	1	-				
Tenn.	9	-	93	-	-	145	53	1	52	1	71	116	-	14	4				
Ala.	9	-	23	-	2	50	30	-	16	-	67	71	-	1	-				
Miss.	-	-	26	-	-	-	2	-	26	-	8	11	-	-	-				
W. S. CENTRAL	57	-	4,181	-	94	3,250	139	13	639	2	183	349	-	66	50				
Ark.	4	-	18	-	31	22	17	1	137	2	21	27	-	3	-				
La.	6	-	10	-	-	48	31	-	107	-	30	19	-	-	5				
Okla.	9	-	174	-	-	110	17	-	100	-	52	53	-	1	1				
Tex.	38	-	3,879	-	63	3,070	74	12	295	-	80	250	-	62	44				
MOUNTAIN	23	5	833	-	100	416	69	3	323	19	268	613	-	109	36				
Mont.	1	-	-	-	1	13	10	-	1	3	35	37	-	14	1				
Idaho	5	-	16	-	10	7	6	-	143	-	41	67	-	49	32				
Wyo.	1	-	-	-	15	-	-	-	2	-	-	-	-	-	-				
Colo.	2	-	91	-	47	97	21	-	24	16	90	85	-	4	-				
N. Mex.	4	-	81	-	12	31	12	N	N	-	18	32	-	-	-				
Ariz.	9	-	291	-	12	145	6	1	126	-	49	371	-	32	-				
Utah	-	-	127	-	-	114	7	-	9	-	31	20	-	2	-				
Nev.	1	5	227	-	3	9	7	2	18	-	4	1	-	8	1				
PACIFIC	309	1	10,645	-	157	2,447	526	8	560	80	721	431	5	608	162				
Wash.	25	-	202	-	69	54	65	2	49	31	196	175	-	-	-				
Oreg.	12	1	165	-	44	61	57	N	2	88	16	-	74	4					
Calif.	286	-	10,168	-	38	2,302	389	6	482	47	353	218	5	519	136				
Alaska	2	-	78	-	2	1	10	-	4	-	7	1	-	-	-				
Hawaii	4	-	30	-	4	32	5	-	25	-	77	21	-	15	22				
Guam	3	U	-	U	1	4	-	U	4	U	1	1	U	-	-				
P.R.	3	1	1,657	-	-	546	12	-	8	-	11	4	-	-	8				
V.I.	-	U	21	U	3	4	-	U	12	U	-	U	-	-	-				
Amer. Samoa	35	U	501	U	-	-	-	U	37	U	4	-	U	-	-				
C.N.M.I.	-	U	4	U	-	-	-	U	6	U	4	-	U	-	-				

\*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable    U: Unavailable    <sup>1</sup>International    <sup>2</sup>Out-of-state

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending October 27, 1990, and October 28, 1989 (43rd Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic- shock Syndrome	Tuberculosis		Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989		Cum. 1990	Cum. 1989				
UNITED STATES	40,390	36,382	245	19,113	17,569	119	415	579	3,559
NEW ENGLAND	1,402	1,427	21	470	514	3	28	19	6
Maine	7	13	7	18	25	-	-	-	-
N.H.	41	11	1	3	23	-	-	1	3
Vt.	1	1	1	8	8	-	-	-	-
Mass.	569	421	10	243	277	3	25	16	-
R.I.	19	28	1	61	53	-	-	-	-
Conn.	765	953	1	137	128	-	1	2	3
MID. ATLANTIC	7,684	7,717	26	4,593	3,596	1	96	31	843
Upstate N.Y.	739	751	10	316	275	-	18	15	155
N.Y. City	3,610	3,668	5	2,873	2,047	-	54	2	-
N.J.	1,247	1,183	-	789	700	1	20	9	295
Pa.	2,088	2,115	11	615	574	-	4	5	393
E.N. CENTRAL	2,874	1,597	64	1,882	1,787	2	30	45	152
Ohio	443	180	19	329	305	1	6	33	9
Ind.	79	52	1	177	174	1	1	2	14
Illi.	1,235	680	8	950	825	-	14	2	26
Mich.	832	578	26	356	380	-	8	8	48
Wis.	285	137	-	70	103	-	1	-	55
W.N. CENTRAL	426	274	26	498	451	41	5	53	554
Minn.	77	47	2	97	91	-	-	-	211
Iowa	66	30	7	50	44	-	1	2	17
Mo.	225	142	8	253	207	31	3	35	25
N. Dak.	1	3	-	16	13	-	-	-	78
S. Dak.	1	1	-	12	26	4	-	2	178
Nebr.	14	23	3	15	18	3	-	1	4
Kans.	42	28	6	55	52	3	1	13	41
S. ATLANTIC	13,018	12,815	22	3,561	3,699	4	68	241	977
Del.	156	174	1	32	35	-	-	1	24
Md.	995	671	1	277	322	-	32	17	360
D.C.	951	649	1	132	148	-	-	2	-
Va.	754	474	3	320	302	1	7	22	171
W. Va.	64	14	-	61	63	-	1	1	35
N.C.	1,454	915	10	482	477	2	2	139	8
S.C.	886	717	2	401	414	1	1	39	118
Ga.	3,287	3,175	1	588	579	-	4	18	181
Fla.	4,471	6,026	3	1,268	1,359	-	21	2	80
E.S. CENTRAL	3,809	2,528	13	1,345	1,375	8	4	74	158
Ky.	82	49	2	314	331	2	1	11	45
Tenn.	1,620	1,125	8	372	420	6	1	53	27
Ala.	1,139	752	3	417	389	-	2	10	83
Miss.	968	602	-	242	235	-	-	-	3
W.S. CENTRAL	6,984	5,032	11	2,266	2,141	40	16	92	394
Ariz.	443	314	-	285	222	31	-	20	31
La.	2,238	1,243	1	251	292	-	1	2	28
Okla.	206	95	7	169	187	8	2	64	114
Tex.	4,097	3,380	3	1,561	1,440	1	13	6	221
MOUNTAIN	739	556	27	452	425	16	20	13	201
Mont.	-	1	-	22	16	-	-	4	44
Idaho	6	1	2	11	23	-	-	1	7
Wyo.	2	6	2	5	-	5	-	1	47
Colo.	42	59	7	27	41	4	-	2	23
N. Mex.	40	26	3	88	72	4	-	1	12
Ariz.	531	265	8	206	199	-	18	1	34
Utah	17	15	5	37	36	3	-	3	16
Nev.	101	183	-	56	38	-	2	-	18
PACIFIC	3,454	4,436	45	4,046	3,581	4	150	11	274
Wash.	282	396	4	221	196	2	21	2	-
Oreg.	118	194	2	102	114	-	4	1	1
Calif.	3,028	3,840	38	3,529	3,069	-	117	3	251
Alaska	16	5	-	34	50	2	-	-	22
Hawaii	10	11	1	160	152	-	8	5	-
Guam	2	4	-	36	74	-	-	-	-
P.R.	291	457	-	95	241	-	1	-	36
V.I.	12	8	-	4	4	-	-	-	-
Amer. Samoa	-	-	-	12	7	-	1	-	-
C.N.M.I.	3	8	-	43	23	-	4	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,\* week ending October 27, 1990 (43rd Week)

Reporting Area	All Causes, By Age (Years)					P&I**	Reporting Area	All Causes, By Age (Years)					P&I**		
	All Ages	>65	45-64	25-44	1-24			All Ages	>65	45-64	25-44	1-24			
NEW ENGLAND	599	411	94	55	19	20	32	S. ATLANTIC	1,326	799	263	172	53	35	49
Boston, Mass.	183	116	31	20	6	10	14	Atlanta, Ga.	151	90	30	23	6	2	1
Bridgeport, Conn.	35	24	6	4	1	-	2	Baltimore, Md.	170	109	37	20	3	1	16
Cambridge, Mass.	21	15	1	4	-	-	2	Charlotte, N.C.	81	52	14	7	5	1	-
Fall River, Mass.	19	14	5	-	-	-	1	Jacksonville, Fla.	107	62	24	15	3	3	9
Hartford, Conn.	64	43	10	5	3	3	4	Miami, Fla.	118	54	35	24	4	1	-
Lowell, Mass.	22	15	3	4	-	-	3	Norfolk, Va.	84	45	16	7	9	2	2
Lynn, Mass.	16	14	1	1	-	-	3	Richmond, Va.	76	37	17	12	5	5	5
New Bedford, Mass.	28	21	5	2	-	-	3	Savannah, Ga.	51	42	6	1	-	-	-
New Haven, Conn.	38	25	5	3	2	3	3	St. Petersburg, Fla.	74	56	10	4	2	2	4
Providence, R.I.	33	22	8	2	1	-	2	Tampa, Fla.	125	86	25	11	6	6	6
Somerville, Mass.	5	4	-	-	1	-	1	Washington, D.C.	259	136	54	48	13	8	4
Springfield, Mass.	49	31	9	5	2	2	2	Wilmington, Del.	32	30	1	-	-	-	-
Watertown, Conn.	28	21	5	1	1	-	1								
Worcester, Conn.	58	48	5	4	1	2	3								
MID. ATLANTIC	2,762	1,793	519	287	74	86	146	E.S. CENTRAL	817	527	173	73	22	22	44
Albany, N.Y.	46	33	5	6	1	1	1	Birmingham, Ala.	98	63	16	9	8	2	1
Allentown, Pa.	16	14	-	-	-	-	1	Chattanooga, Tenn.	55	39	9	7	-	-	3
Buffalo, N.Y.	100	70	20	6	1	3	4	Knoxville, Tenn.	91	62	16	11	2	-	13
Camden, N.J.	36	20	7	7	-	2	1	Louisville, Ky.	83	51	23	4	1	4	5
Elizabeth, N.J.	13	11	2	-	-	-	1	Memphis, Tenn.	205	123	50	19	5	8	6
Erie, Pa.	43	35	5	2	-	1	2	Mobile, Ala.	100	68	18	10	1	3	6
Jersey City, N.J.	63	37	9	6	-	11	1	Montgomery, Ala. <sup>5</sup>	36	27	7	2	-	-	3
N.Y. City, N.Y.	1,349	842	267	167	41	32	53	Nashville, Tenn.	149	94	34	11	5	5	7
Newark, N.J.	83	37	23	15	2	6	7	W.S. CENTRAL	1,687	1,006	367	196	67	51	49
Paterson, N.J.	29	14	-	-	1	4	1	Austin, Tex.	58	34	11	8	4	1	5
Philadelphia, Pa.	425	267	77	48	19	14	33	Baton Rouge, La.	34	21	6	3	4	2	2
Pittsburgh, Pa. <sup>1</sup>	118	75	23	10	4	5	8	Corpus Christi, Tex.	42	29	16	4	1	2	3
Reading, Pa.	32	27	2	2	-	1	1	Dallas, Tex.	187	84	56	30	9	8	2
Rochester, N.Y.	135	102	22	3	1	7	7	El Paso, Tex.	72	38	19	7	6	2	1
Schenectady, N.Y.	37	26	8	3	-	2	1	Fort Worth, Tex.	72	48	13	6	1	4	1
Scranton, Pa. <sup>1</sup>	31	23	7	1	-	2	1	Houston, Tex. <sup>5</sup>	734	436	169	89	24	16	18
Syracuse, N.Y.	120	94	19	2	3	2	2	Little Rock, Ark.	72	39	17	11	1	4	1
Trenton, N.J.	37	28	6	3	-	3	2	New Orleans, La.	110	77	18	6	6	3	-
Utica, N.Y.	24	18	4	2	-	3	2	San Antonio, Tex.	168	107	30	16	8	7	5
Yonkers, N.Y.	25	20	5	-	-	1	1	Shreveport, La.	33	22	7	2	-	2	3
E.N. CENTRAL	2,313	1,519	480	169	58	87	129	Tulsa, Okla.	105	71	15	14	3	2	7
Akron, Ohio	86	57	16	5	3	5	3	MOUNTAIN	682	456	135	46	24	21	49
Canton, Ohio	59	38	13	6	-	2	1	Albuquerque, N. Mex.	90	63	16	6	2	3	3
Chicago, Ill. <sup>5</sup>	564	362	125	45	10	22	16	Colorado, Colo.	39	20	12	6	1	-	6
Cincinnati, Ohio	134	94	26	7	2	5	19	Denver, Colo.	104	67	15	9	4	9	8
Cleveland, Ohio	145	87	30	13	8	7	14	Las Vegas, Nev.	102	64	27	5	1	4	5
Columbus, Ohio	183	113	44	12	4	10	9	Ogden, Utah	25	22	3	-	-	-	5
Dayton, Ohio	121	82	25	10	1	3	9	Phoenix, Ariz.	146	94	30	11	7	4	9
Detroit, Mich.	209	127	42	24	8	8	6	Pueblo, Colo.	22	19	1	1	3	-	-
Evansville, Ind.	39	26	10	2	-	1	1	Salt Lake City, Utah	45	26	10	3	3	3	6
Fort Wayne, Ind.	72	49	13	6	3	1	4	Tucson, Ariz.	109	81	21	5	1	1	8
Gary, Ind.	22	9	10	2	1	-	1	PACIFIC	1,915	1,301	325	182	83	41	113
Grand Rapids, Mich.	57	36	8	10	1	2	7	Berkeley, Calif.	17	14	1	1	1	-	-
Indianapolis, Ind.	141	86	35	6	6	8	6	Fresno, Calif.	48	34	6	4	2	2	1
Madison, Wis.	40	32	1	3	2	2	1	Glendale, Calif.	29	21	6	2	-	-	-
Milwaukee, Wis.	140	104	25	5	2	4	14	Honolulu, Hawaii	80	62	14	3	1	-	11
Peoria, Ill.	48	29	13	1	1	4	2	Long Beach, Calif.	57	42	8	4	3	-	8
Rockford, Ill.	48	32	11	3	2	-	7	Los Angeles Calif.	555	349	99	77	20	7	15
South Bend, Ind.	40	32	6	1	-	1	1	Pasadena, Calif.	34	30	2	1	-	-	3
Toledo, Ohio	101	76	16	4	2	3	3	Portland, Oreg.	122	90	22	6	2	2	11
Youngstown, Ohio	64	48	11	4	1	-	4	Sacramento, Calif.	156	114	27	7	2	6	11
W.N. CENTRAL	786	568	122	46	16	34	28	San Diego, Calif.	136	87	25	13	4	7	16
Des Moines, Iowa	51	36	11	1	2	3	2	San Francisco, Calif.	156	94	29	24	4	5	8
Duluth, Minn.	32	28	3	1	-	2	2	San Jose, Calif.	164	113	30	13	5	3	8
Kansas City, Kans.	36	23	8	3	2	-	2	Seattle, Wash. <sup>5</sup>	143	98	27	14	3	1	3
Kansas City, Mo.	94	73	15	4	1	1	5	Spokane, Wash.	55	41	8	1	2	3	5
Lincoln, Nebr.	46	32	9	2	1	2	5	Tacoma, Wash.	88	62	13	9	2	2	7
Minneapolis, Minn.	196	139	37	11	4	5	9	TOTAL	12,889 <sup>11</sup>	8,380	2,484	1,236	386	390	639
Omaha, Nebr.	79	61	9	6	2	1	7								
St. Louis, Mo.	131	95	15	8	3	10	2								
St. Paul, Minn.	65	49	6	5	2	3	-								
Wichita, Kans.	56	32	9	5	-	10									

\*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

\*\*Pneumonia and influenza.

<sup>1</sup>Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

<sup>2</sup>Total includes unknown ages.

<sup>3</sup>Data not available. Figures are estimates based on average of past available 4 weeks.

*Hospitalizations — Continued*

6. NCHS. Vital statistics mortality data, underlying cause of death detail [machine-readable public-use data tape]. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1987.
7. Health Care Financing Administration. Special report: hospital data by geographic area for aged Medicare beneficiaries—selected diagnostic groups, 1986. Vol 1. Baltimore, Maryland: US Department of Health and Human Services, Health Care Financing Administration, 1990; HCFA publication no. 03300.

**Mortality from Alzheimer Disease — United States, 1979–1987**

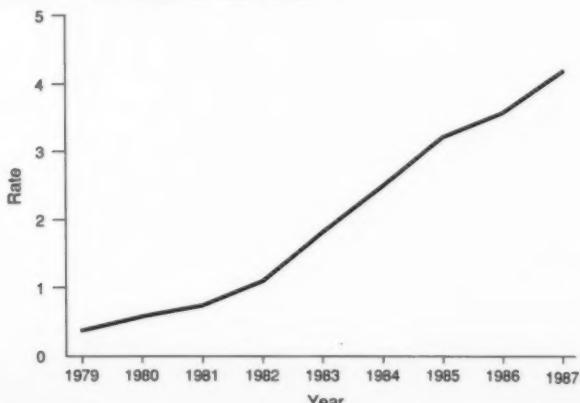
Although age-adjusted death rates for many leading causes of death in the United States declined from 1979 through 1987 (1), the rates for Alzheimer disease (AD)\* (*International Classification of Disease, Ninth Revision, Clinical Modification* [ICD-9-CM] rubric 331.0) increased substantially. To characterize mortality patterns for AD and related disorders, CDC analyzed U.S. mortality data for 1979–1987. This report provides a preliminary summary of findings from this analysis.

Deaths from AD were analyzed using data from multiple cause-of-death data tapes supplied by CDC's National Center for Health Statistics. Denominators for calculating rates were obtained from intercensal population estimates. Age-adjusted death rates were standardized to the 1980 U.S. population.

From 1979 through 1987, AD was listed as the underlying cause of death for 46,202 persons in the United States. The age-adjusted annual death rate increased from 0.4 per 100,000 persons in 1979 to 4.2 per 100,000 persons in 1987 (Figure 1). For men, the annual rate increased from 0.5 to 4.6 per 100,000, and for women, from 0.3 to 3.9 per

\*Clinically, AD is characterized by progressive dementia without a disturbance in consciousness. The diagnosis of AD requires exclusion of other diseases associated with dementia (2).

**FIGURE 1. Annual age-adjusted death rates\* for Alzheimer disease as underlying cause of death — United States, 1979–1987**



\*Per 100,000 population.

*Alzheimer Disease — Continued*

100,000. For blacks and whites, rates increased with age; increases were higher for the older age groups (Table 1). Within each age group, the rate for whites was higher than for blacks.

In 1987, age-adjusted death rates were highest in the Rocky Mountain states and in New England (Table 2). Montana and Utah had the highest rates in 1987 and the greatest differences in rates between 1979 and 1987. New York and Alaska had the lowest rates in 1987 and the smallest differences in rates between 1979 and 1987.

To examine the hypothesis that shifts in diagnoses accounted for the changes in rates, investigators compared age-adjusted death rates for AD, senile and presenile dementias (ICD-9-CM rubrics 290.0 and 290.1, respectively), and senility (ICD-9-CM rubric 797) (Table 3). For both AD and the dementias, rates increased from 1979 to 1987; in comparison, the rate for senility declined.

*Reported by: Div of Chronic Disease Control and Community Intervention, Office of Surveillance and Analysis, and Office of the Director, Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** Although death rates represent a potential measure of the public health impact of AD, variations in the accuracy of diagnosis and in the completion of death certificates limit the value of mortality data for estimating the prevalence of AD (3-7). Nonetheless, the patterns for AD death rates in this report are consistent with those in England (4), Australia (5), Norway (6), and Canada (7). In these countries, deaths from or death rates for AD and related disorders have also increased.

At least two factors may be responsible for the observed increase in death rates for AD in the United States. First, the incidence or prevalence of AD may have increased. Second, heightened awareness of AD may have caused physicians to diagnose cognitive impairment as AD more frequently than in the past; caused physicians to change their diagnoses and recording of deaths (i.e., increases in mortality attributable to dementia have been accompanied by decreases in deaths from senility); or caused the death certificate to be a more sensitive or less specific record of the premortem diagnosis of AD. Further investigation may clarify the contribution of these two factors to increased death rates for AD.

The heightened awareness of AD among health-care providers may be due in part to educational efforts by the Alzheimer's Disease and Related Disorders Association (created in 1979) and to increased federal funding for research on AD and related disorders (from \$3.9 million in 1976 to \$53.9 million in 1986 [8]).

**TABLE 1. Death rates\* for Alzheimer disease as underlying cause of death, by decedent's age and race — United States, 1979 and 1987**

Age (yrs) <sup>†</sup>	Race/Year			
	White		Black	
	1979	1987	1979	1987
50-59	0.3	0.6	0.2	0.4
60-69	1.7	4.8	0.8	3.2
70-79	2.7	28.4	1.0	16.4
≥80	3.8	108.8	1.4	45.3

\*Per 100,000 population.

<sup>†</sup>In 1979 and 1987, the rates for both blacks and whites <50 years of age were <0.05 per 100,000 population.

## Alzheimer Disease — Continued

TABLE 2. Deaths from and age-adjusted death rates for Alzheimer disease as underlying cause of death, by area of residence — United States, 1979 and 1987

Area	No. deaths		Rate*		Difference
	1979	1987	1979	1987	
Alabama	13	184	0.4	4.1	3.7
Alaska	1	4	1.1	2.7	1.6
Arizona	16	191	0.6	5.5	4.9
Arkansas	6	108	0.2	3.4	3.2
California	109	1,052	0.5	3.9	3.4
Colorado	9	157	0.4	5.7	5.3
Connecticut	6	160	0.2	4.1	3.9
Delaware	1	33	0.2	5.0	4.8
District of Columbia	4	23	0.6	3.3	2.7
Florida	68	737	0.5	3.9	3.4
Georgia	14	312	0.3	5.7	5.4
Hawaii	1	31	0.1	3.5	3.4
Idaho	2	63	0.2	6.4	6.2
Illinois	46	516	0.4	4.0	3.6
Indiana	17	280	0.3	4.6	4.3
Iowa	12	206	0.4	4.9	4.5
Kansas	15	157	0.6	4.8	4.2
Kentucky	16	189	0.5	4.6	4.1
Louisiana	7	135	0.2	3.4	3.2
Maine	10	101	0.8	6.6	5.8
Maryland	10	194	0.3	4.6	4.3
Massachusetts	51	430	0.8	5.5	4.7
Michigan	24	274	0.3	2.9	2.6
Minnesota	7	226	0.2	4.2	4.0
Mississippi	1	97	?	3.4	3.4
Missouri	18	267	0.3	4.0	3.7
Montana	5	81	0.7	9.2	8.5
Nebraska	8	102	0.5	4.6	4.1
Nevada	1	47	0.3	6.1	5.8
New Hampshire	6	101	0.7	8.6	7.9
New Jersey	20	274	0.3	3.1	2.8
New Mexico	3	59	0.3	4.6	4.3
New York	59	455	0.3	2.1	1.8
North Carolina	15	354	0.3	5.5	5.2
North Dakota	2	26	0.3	3.1	2.8
Ohio	52	578	0.5	4.8	4.3
Oklahoma	8	166	0.2	4.3	4.1
Oregon	11	238	0.4	7.1	6.7
Pennsylvania	39	467	0.3	3.0	2.7
Rhode Island	5	65	0.5	4.7	4.2
South Carolina	11	136	0.4	4.6	4.2
South Dakota	2	45	0.3	4.6	4.3
Tennessee	6	257	0.1	4.8	4.7
Texas	38	592	0.3	4.0	3.7
Utah	5	112	0.5	9.1	8.6
Vermont	4	46	0.8	7.0	6.2
Virginia	12	280	0.3	5.2	4.9
Washington	32	326	0.9	6.7	5.8
West Virginia	3	85	0.1	3.7	3.6
Wisconsin	25	271	0.5	4.4	3.9
Wyoming	1	21	0.3	5.6	5.3
<b>Total</b>	<b>857</b>	<b>11,311</b>	<b>0.4</b>	<b>4.2</b>	<b>3.8</b>

\*Per 100,000 population per year.

†Rate &lt;0.05.

## Alzheimer Disease — Continued

TABLE 3. Deaths from and age-adjusted death rates for Alzheimer disease, senile and presenile dementias, and senility diagnoses\* — United States, 1979 and 1987

Associated cause of death (ICD-9-CM rubric)	No. deaths		Rate <sup>†</sup>		
	1979	1987	1979	1987	Difference
Alzheimer disease (331.0)	1,728	26,325	0.8	9.7	+ 8.9
Senile (290.0) and presenile (290.1) dementias	6,299	16,807	2.9	6.1	+ 3.2
Senility (797)	24,735	18,401	11.2	6.7	- 4.5

\*Diagnosis recorded on the death certificate as associated cause of death.

<sup>†</sup>Per 100,000 population.

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## Enterovirus Surveillance — United States, 1990

Since 1985, nonpolio enterovirus (NPEV) surveillance data on isolates reported from March through May in the United States have been used to predict the serotypes likely to be isolated during July through December, which encompasses the period of the peak enterovirus activity. From March through May 1990, state virology laboratories reported to CDC 77 NPEV isolates. Echovirus 30 was isolated most frequently (19 isolates [25%]), followed by coxsackievirus A9 (eight isolates [10%]), coxsackievirus B2 (eight isolates [10%]), echovirus 5 (five isolates [6%]), echovirus 6 (five isolates [6%]), and coxsackievirus B5, echovirus 7, echovirus 9, and echovirus 11 (four isolates each [5%]).

During March through May 1989, coxsackievirus B5 was the most commonly reported NPEV (16 [52%] of 31 isolates). Of all 1260 NPEV isolates reported for 1989, the six most common were coxsackievirus B5 (21%), echovirus 9 (20%), echovirus 11 (10%), coxsackievirus B2 (6%), echovirus 6 (5%), and coxsackievirus A16 (5%).

*Reported by: State virology laboratory directors. Respiratory and Enterovirus Br, Div of Viral and Rickettsial Diseases, Center for Infectious Diseases, CDC.*

*Enterovirus Surveillance — Continued*

**Editorial Note:** Enteroviruses are a group of 65 different, common agents causing illnesses that range from mild, nonspecific manifestations to syndromes as severe as aseptic meningitis. Reporting of the most prevalent enterovirus serotypes may assist diagnostic laboratories in the rapid identification of enterovirus isolates and public health officials in recognizing and controlling outbreaks of enteroviral disease. Among the commonly reported isolates for 1989, coxsackievirus A16 was the agent most probably responsible for large regional outbreaks of hand, foot, and mouth disease.

Since 1970, state health department laboratories have reported enterovirus serotypes to CDC on a monthly basis approximately 6–8 weeks after specimens are submitted for identification; the delay in reporting is due to the time necessary to isolate and identify the viruses. Previous reviews of enterovirus surveillance data have demonstrated that isolates from March through May predict the serotypes likely to be isolated in July through December (1,2). From 1970 through 1983, the six most common isolates in March through May accounted for an average of 59% of the isolates in July through December (range: 51%–74%), and for this period in 1984–1988, for 50%–58% of the isolates. In 1989, they accounted for 66% of isolates in July through December.

Serotypes isolated in early 1990 suggested that echovirus 30, coxsackieviruses A9 and B2, and echoviruses 5 and 6 are likely to be prevalent this year. Preliminary data from June and July 1990 indicate that these serotypes accounted for 75% of the enteroviruses reported. These five serotypes and five of the six most frequently reported isolates in 1989 are among the 15 most frequently reported isolates during 1970–1983 (1).

Virology laboratories are encouraged to report identified enteroviruses through state virology laboratories to CDC.

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### **Update: Analysis of L-Tryptophan for the Etiology of Eosinophilia-Myalgia Syndrome**

In August 1990, CDC and the Food and Drug Administration proposed a structure for peak 97 (Figure 1A), the high performance liquid chromatographic (HPLC) peak that was most predictive of L-tryptophan (LT) lots associated with eosinophilia-myalgia syndrome (EMS) cases (1). This report updates those findings.

Analyses of the product of LT and acetaldehyde show that the product is the di-L-tryptophan aminal of acetaldehyde (DTAA), with the methine bridge coupling the two tryptophan molecules across the indole nitrogens (Figure 1B) rather than the amino nitrogens (Figure 1A). This synthesized product has the same proton nuclear magnetic resonance (NMR) spectra, mass spectra, and HPLC chromatographic properties as peak 97. Key information to support the location of the methine bridge was provided by the analyses of synthesized product using a two-dimensional long-range  $^{13}\text{C}$ - $^1\text{H}$  shift correlation NMR spectroscopic experiment (2), which demonstrated that the methine proton of the acetaldehyde residue is coupled to carbons

*L-Tryptophan – Continued*

2 and 2' of the LT groups and that protons 2 and 2' of these groups are correspondingly spin-coupled to the methine carbon of the acetaldehyde residue. This experiment could not be performed on the limited quantity of peak 97 collected from the case-associated lots. In addition, chemical derivatization experiments with the synthesized material and with model compounds are consistent with Figure 1B but not with 1A.

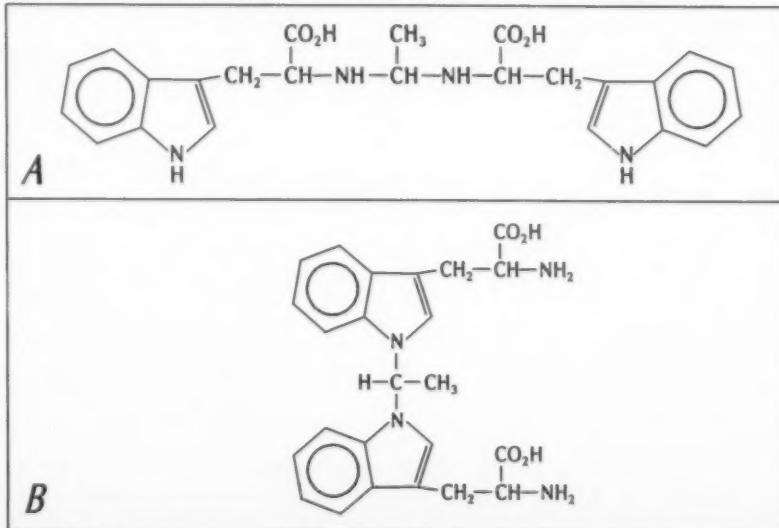
*Reported by: Center for Food Safety and Applied Nutrition, Food and Drug Administration, Center for Environmental Health and Injury Control, CDC.*

**Editorial Note:** This confirmation of the structure of peak 97 as the DTAA shown in Figure 1B will enable testing of the correct compound for its biologic effects and assessment of any structure-activity relationship. Studies of the biologic effects of synthesized DTAA—including evaluation of the recently developed rat model for EMS (3)—are in progress. Clarification regarding the role of peak 97 may be important in understanding the pathophysiology of EMS and similar diseases (e.g., toxic-oil syndrome).

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**FIGURE 1. Proposed structure for di-L-tryptophan aminal of acetaldehyde\***



\*A: Original proposed structure. B: New proposed structure.

**Notices to Readers****National Conference  
on State-Based Occupational Health and Safety Activities**

The National Conference on State-Based Occupational Health and Safety Activities, sponsored by CDC's National Institute for Occupational Safety and Health (NIOSH), National Center for Health Statistics, and Public Health Practice Program Office and the Department of Labor's Occupational Safety and Health Administration and Bureau of Labor Statistics, will be held September 3-6, 1991, in Cincinnati, Ohio. The theme, "Preparing for the 90s," places a high priority on prevention and embraces the concept that efforts at the state level will continue to play a vital role in prevention efforts. The deadline for submitting abstracts is March 1, 1991.

Additional information is available from the Executive Secretary, Program Planning Committee, NIOSH, Mailstop D26, CDC, 1600 Clifton Road, Atlanta, GA 30333; telephone (404) 639-3345.

**Prevention 91 Conference**

On March 16-19, 1990, the American College of Preventive Medicine and the Association of Teachers of Preventive Medicine will sponsor the Eighth Annual National Preventive Medicine Meeting in Baltimore, Maryland. CDC and the Agency for Toxic Substances and Disease Registry, along with other health organizations, will cosponsor the meeting. Topics include the cost-effectiveness and efficacy of prevention, rural health problems, nutrition, underserved populations and access to preventive services, environmental health, injury and violence, genetics, and substance abuse. Activities include computer demonstrations, workshops, and special interest group meetings.

Registration information is available from Prevention 91, 1015 15th Street, NW, Suite 403, Washington, DC 20005; telephone (202) 789-0006.

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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. Accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials, as well as matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Mailstop C-08, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

Director, Centers for Disease Control  
William L. Roper, M.D., M.P.H.  
Director, Epidemiology Program Office  
Stephen B. Thacker, M.D., M.Sc.



Editor, MMWR Series  
Richard A. Goodman, M.D., M.P.H.  
Managing Editor  
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